



European Commission

Enterprise and Industry
Directorate-General

The Regulatory Approach to MACs in the European Union - Current Status and Future Initiatives

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Why EC legislation on MACs?

Climate Change

- The greatest environmental and economic challenge facing humanity
- Global problem – global action needed

Response to climate change

- Kyoto Protocol (*the EU is committed to reduce greenhouse gas emissions by 8% from 1990 levels by 2008-2012*)
- The key priority in the 6th Environment Action Programme (2001-2010)
- Major priority of EU's Sustainable Development Strategy
- European Climate Change Programme (ECCP)

Regulatory steps

Legislative process

- **Codecision**

Legal act, prepared by the Commission, is adopted by the European Parliament and the Council

Directive 2006/40/ EC of the European Parliament and of the Council relating to emissions from air-conditioning systems in motor vehicles and amending Council Directive 70/156/EEC

Official Journal of the European Union L 161, 14.06.2006, p. 12

Regulatory steps

Legislative process

- **Comitology**

Legal act with technical requirements is adopted through the CATP (Committee for Adaptation to Technical Progress)

Regulatory steps

MACs – 2 acts adopted by comitology

1. Commission Regulation (EC) No 706/2007 of 21 June 2007 laying down, pursuant to Directive 2006/40/EC of the European Parliament and of the Council, administrative provisions for the EC type-approval of vehicles, and a harmonised test for measuring leakages from certain air-conditioning systems
2. Directive 2007/37/EC of 21 June 2007 amending Annexes I and III to Council Directive 70/156/EEC on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers

Official Journal of the European Union L 161, 22.06.2007

EC type-approval

- Procedure whereby a Member State certifies that a type of vehicle satisfies the relevant administrative provisions and technical requirements relating to: *active and passive safety, protection of the environment, performances and other issues*
- **Objective** - to enable vehicles to be placed on the market

Benefits

- Approvals can be obtained anywhere in the EU
- Once approved – can be sold everywhere in the EU

The main objectives of MACs Directive

- The **control of leakage** of certain fluorinated greenhouse gases with a global warming potential (GWP) higher than 150 in MACs
- The **prohibition** of MACs using those gases from a certain date

MACs Directive 2006/40/EC

SUBJECT MATTER - (*Art. 1*)

- Type - approval of vehicles as regards emissions from, and the safe functioning of, air-conditioning systems fitted to vehicles
- Retrofitting and refilling of such systems

SCOPE - (*Art. 2*)

- passenger cars - M1
- certain commercial vehicles - N1 class I

MACs Directive 2006/40/EC

CONTROL OF LEAKAGE – (*Art. 5.2 and 5.3*)

Leakage rate of F-gases with GWP>150

- not exceeding 40 grams/year for single evaporator system
- not exceeding 60 grams/year for dual evaporator system

From the date

- **21 June 2008** (12 months after the adoption of the test procedure) for **new types of vehicles**
- **21 June 2009** (24 months after the adoption of the test procedure) for **all new vehicles**

MACs Directive 2006/40/EC

PHASE – OUT OF MACs DESIGNED TO USE F-GASES
WITH GWP>150 - (*Art. 5.4 and 5.5*)

- From 1 January 2011 for **new types of vehicles**
- From 1 January 2017 for **all new vehicles**

RETROFITTING AND REFILLING - (*Art. 6*)

- Retrofitting with certain MACs not allowed from 2011 / 2017
- MACs refilling with F-gases with GWP > 150 not allowed from 2011/2017
Exception for systems fitted before that date
- Provision for service providers (abnormal leak)

Next steps

In future (if appropriate) following measures may be adopted

- measures needed to ensure the safe functioning and proper servicing of refrigerants in MACs
- measures relating to retrofitting and refilling of in-use vehicles and systems
- the adaptation of the method for determining the relevant GWP of preparations

Review clause

REVIEW – (*Art. 8.1*)

The Commission shall examine whether

- to extend the legislation to other categories of vehicles (M_2 and M_3 , N_1 classes II and III)
- to amend provisions concerning GWP of F-gases, changes should take account of technological and scientific developments with respect to industrial product planning timescales

It shall publish a report by 5 years after the entry into force

MACs Regulation (EC) No 706/2007

Measures on:

- EC component type-approval (leak components/ air-conditioning systems)
- EC type-approval of a vehicle with regard to emissions from an air-conditioning system

MACs Regulation (EC) No 706/2007

Type of:

- vehicle with regard to emissions from air-conditioning system,
- air-conditioning system,
- leak component,

is defined

Leak components

The list of leak components is specified

- Hose including crimping
- Individual connections (male/female)
- Valves, switches and sensors
- Thermal expansion valves with connections
- Evaporator with external connections
- Compressor with connections
- Condenser with integrated serviceable dryer
- Receiver/dryer with connections
- Accumulator with connections

Leakage test

Technical provisions for the determination of the leakages, in particular:

- Equipment requirements
- Test conditions
- Test procedure and data requirements

Leakage test

General requirements:

- testing of single components, systems or vehicles
- the individual results of the components are added to get the system value
- use of a sealed chamber
- correlation to real driving conditions
- calibration of the enclosure and analyser is necessary

Leakage test – test results

Overall results of tests

- final result of the test to refer to real driving conditions
- taking into account the ARMINES study for ACEA, a correlation factor has been calculated:

$$CF = 0.277$$

Directive 2007/37/EC

- amending Annexes of the Framework Directive 70/156/EEC
- adding new elements to the list of information in Annex I and the information document for the purpose of vehicle EC type-approval in Annex III

Applicability

- all 3 acts are applicable as from **5 January 2008**
- from this date – possibility for voluntary type-approvals

Questions for future

New refrigerants

- as announced in 2006
- still under development
- would have to be ready for the deadlines set out by Directive 2006/40/EC (**2011 and 2017**)

Questions for future

Communications from the Commission
(7.02.2007):

- on the review of the Community Strategy to reduce CO₂ emissions from cars
- on CARS 21

CO₂ strategy

Additional 10 g/km to be achieved by:

- **setting minimum efficiency requirements for MACs**
- fitting of accurate tyre pressure monitoring systems
- setting maximum tyre rolling resistance limits
- the use of gear shift indicators
- fuel efficiency progress
- increased use of bio fuels

Conclusions

- Far reaching legislative package affecting mobile air conditioners in the world
- Brings MACs under the well known framework of the EC type approval system
- Driving innovation
- Long transitional period for phase out
- Technology neutral
- Treats all manufacturers equally



Thank you!

Thank you for your attention!

http://ec.europa.eu/enterprise/automotive/pagesbackground/pollutant_emission/index.htm#macs